IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants	:	R. Fischer et al.
Serial No.	:	10/563,205
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For	:	ACTIVE AGENT COMBINATION EXHIBITING INSECTICIDAL AND ACARICIDAL PROPERTIES
Group Art Unit	:	1616
Examiner	:	JOHN PAK

DECLARATION

Dr. Wolfgang Thielert hereby declares:

- that he is an agronomist having studied at the University of Bonn, Germany;
- that he received his doctor's degree in agriculture at the University of Bonn, Germany in 1984;
- that he entered the employ of Bayer in 1984;
- that he has specialized in plant protection (phytopharmacology);
- that the following tests have been carried out under his supervision and direction

Formula for the efficacy of the combination of two compounds

The expected efficacy of a given combination of two compounds is calculated as follows (see Colby, S.R., „Calculating Synergistic and antagonistic Responses of Herbicide Combinations", Weeds 15, pp. 20-22, 1967):

If

X is the efficacy expressed in % mortality of the untreated control for test compound A at a concentration of m ppm respectively m g/ha,

Y is the efficacy expressed in % mortality of the untreated control for test compound B at a concentration of n ppm respectively n g/ha,

E is the efficacy expressed in % mortality of the untreated control using the mixture of A and B at m and n ppm respectively m and n g/ha,

then is $$E = X + Y - \frac{X \times Y}{100}$$

If the observed insecticidal efficacy of the combination is higher than the one calculated as „E", then the combination of the two compounds is more than additive, i.e., there is a synergistic effect.

Example A

Bemisia tabaci – test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cotton plants (*Gossypium hirsutum*) infested with eggs, larvae and pupae of the white fly (*Bemisia tabaci*) were sprayed with a test solution containing the desired concentration of the active ingredient.

After the specified period of time, mortality in % is determined. 100% means that all white flies have been killed and 0% means that none of the white flies have been killed.

According to the present application in this test e.g. the combination according to the invention shows a synergistic effect compared to single compounds:

Tabelle A: **Bemisia tabaci – Test**

Active Ingredient	**concentration in ppm**	**Mortality in % after 5d**
Flubendiamid	100	0
Spiromesifen	100	80
Flubendiamid + Spiromesifen (1 : 1) According to the invention	**100 + 100**	**obs.*** **100** **cal.**** **80**

* obs. = observed insecticidal efficacy
** cal. = efficacy calculated with Colby-formula

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If the observed insecticidal efficacy of the combination is higher than the one calculated as „E", then the combination of the two compounds is more than additive, i.e., there is a synergistic effect.

Example **B**

Myzus persicae – test (MYZUPE spray application)

Solvent: 78 parts by weight acetone

1.5 parts by weight dimethylformamide

Wetting agent: 0.5 parts by weight alkylarylpolyglcolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Chinese cabbage (*Brassica pekinesis*) leaf-discs infected with all instars of the green peach aphid (*Myzus persicae*), are sprayed with a preparation of the active ingredient at the desired concentration.

After the specified period of time, mortality in % is determined. 100% means that all aphids have been killed; 0% means that none of the aphids have been killed.

According to the present application in this test e.g. the combination according to the invention shows a superior effect compared to the state of the art:

Tabelle B

Plant damaging insects

Myzus persicae – Test

Active Ingredient	**concentration in g/ha**	**Mortality in % after 1d**		
Flubendiamid	100	0		
Spiromesifen	100	0		
Spirodiclofen	100	20		
Flubendiamid + Spiromesifen (1 : 1) According to the invention	**100 + 100**	**obs.*** **20**	**cal.**** **0**	+ 20 %
Flubendiamid + Spirodiclofen (1 : 1) State of the art	**100 + 100**	**obs.*** **30**	**cal.**** **20**	+ 10 %

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Example C

Bemisia tabaci – test

Solvent: 7 parts by weight of dimethylformamide

Emulsifier: 2 parts by weight of alkylaryl polyglycolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

Cotton plants (*Gossypium hirsutum*) infested with eggs, larvae and pupae of the white fly (*Bemisia tabaci*) were sprayed with a test solution containing the desired concentration of the active ingredient.

After the specified period of time, mortality in % is determined. 100% means that all white flies mites have been killed and 0% means that none of the white flies have been killed.

According to the present application in this test e.g. the combination according to the invention shows a superior effect compared to the state of the art:

Tabelle C

Plant damaging insects

Bemisia tabaci – Test

Active Ingredient	**concentration in ppm**	**Mortality in % after 9d**
Flubendiamid	100	0
Spiromesifen	0,8	0
Spirodiclofen	0,8	0
Flubendiamid + Spiromesifen (125 : 1) According to the invention	**100 + 0,8**	**obs.*** **cal.**** **85** **0** + 85 %
Flubendiamid + Spirodiclofen (125 : 1) State of the art	**100 + 0,8**	**obs.*** **cal.**** **0** **0** +/- 0 %

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

Example **D**

Tetranychus urticae – test; OP-resistant (TETRUR spray application)

Solvent: 78 parts by weight acetone

1.5 parts by weight dimethylformamide

Wetting agent: 0.5 parts by weight alkylarylpolyglcolether

To produce a suitable preparation of active compound, 1 part by weight of active compound is mixed with the stated amount of solvent and emulsifier, and the concentrate is diluted with emulsifier-containing water to the desired concentration.

French beans (*Phaseolus vulgaris*) which are heavily infested with all stages of the two spotted spidermite (*Tetranychus urticae*), are sprayed with a preparation of the active ingredient at the desired concentration.

After the specified period of time, mortality in % is determined. 100% means that all spider mites have been killed and 0% means that none of the spider mites have been killed.

According to the present application in this test e.g. the combination according to the invention shows a superior effect compared to the state of the art:

Tabelle D

Plant damaging mites

Tetranychus urticae – Test

Active Ingredient	**concentration in g/ha**	**Mortality in % after 6d**
Flubendiamid	100	0
Spiromesifen	0,8	50
Spirodiclofen	0,8	50
Flubendiamid + Spiromesifen (125 : 1) According to the invention	**100 + 0,8**	**obs.*** **70** **cal.**** **50** + 20 %
Flubendiamid + Spirodiclofen (125 : 1) State of the art	**100 + 0,8**	**obs.*** **50** **cal.**** **50** +/- 0 %

* obs. = observed insecticidal efficacy

** cal. = efficacy calculated with Colby-formula

The undersigned declarant hereby declares that all statements made herein of his own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

19.2.2010 Wolfgang Thielert

Date Dr. Wolfgang Thielert